

# Inside the innovations by



Students of Bishop Stuart University, Mbarara, display their various products, including honey, pastures, shoe polish, vaseline, and soap, during the 16th Annual Higher Education Exhibition in Gulu City last week. PHOTOS: JANE NAFULA

Last week, about 50 universities and institutions of higher learning gathered at Gulu University's playgrounds in Gulu City for the 16th Annual Higher Education Exhibition, organised by the National Council for Higher Education from March 27 to 29, where they exhibited several unique innovations. It was held under the theme, "Harnessing Innovations in Higher Education for Accelerated Economic Transformation". Jane Nafula shared with us some of these innovations.

**Kumi University: Smart poultry house with automated feeders**  
Mr Reuben Oligo, pursuing a Bachelor of Education degree specialising in Mathematics and Physics, developed an automated chicken feeder. He says he developed it to save time in taking care of his brother's poultry manually.

"When I innovated the feeder, my life changed. I started arriving at the university (for class) on time and attended all the lectures. My CGPA has now improved from 2.68 to 3.95," he said.

According to him, the feeder opens automatically after every 30 minutes, dispenses food for four seconds and closes, while the drinkers open after every 24 hours.

Oligo is currently working on his second feeder with support from Kumi University. The university director of Postgraduate Training, Dr Isaac Iliasi, says Mr Oligo's innovation is a testimony that students' innovations can address local problems.

**Kumi University: Smart tractor**

Timothy Ariong is a final year Computer Science student at Kumi University and has developed a smart tractor, which is more efficient and effective compared to an ox plough, operated by about three people.

It has the capacity to inform the user that it is due for service, to avoid breaking down. It has fewer gears to engage and can detect the mental stability of the person operating it.

"If the user is intoxicated with alcohol, it will display a message saying stop, go back, and come back when you are sober. It also warns the user against drinking and operating the tractor," he explained.

**Kyambogo University: Electric power bank for electric motorcycles, cars**

Hope Adera, a second-year student of Automotive and Power Engineering, developed an electric power bank that can be used to recharge the batteries of electric motorcycles before reaching the designated charging stations.

"The government is increasingly promoting electric mobility, but



A student of Kumi University exhibits an internal car wiper.

sometimes the drivers and cyclists get stranded when they run out of battery and need to replace it. I also heard that the electric buses manufactured by Kura Motors have started going to South Africa, but they have to rely on designated stations along the way," she explains. "This prompted me to come up with

something that could bail out drivers or cyclists whose batteries run out of power along the way." The power bank gives the cyclist an extra 15 kilometres of range.

**Uganda Christian University (UCU): Hexapod rescue box**  
Jolly Joshua Lumbye, a student of

# university students



Students of Kumi University exhibit a smart tractor. PHOTO: JANE NAFULA

**need tukutuku, electric bike**

Ruthy Adriana and Anthony Kyambadde, pursuing a Bachelor of Science with Education, developed a hydroponics system to be used for growing crops, through a soil-free, water-efficient method by delivering nutrient-rich water directly to the roots of the plants.

These plants are able to grow just like those planted in soil.

"People can grow plants in water, not because we don't have soil, but we want to harness the needs of people who live in limited space, but want to grow crops like vegetables, among others," Ms Adriana explained.

**How it works:** Holes are made in pipes where containers that hold the plants are placed. The water that contains nutrients like nitrogen and phosphorus is continuously pumped into the holes to allow the plant to grow.

A group of students here also developed an electric tricycle or tukutuku, which is intended to ease the transportation of agricultural products by farmers at a low cost.

**Muni University: Fertilizers**

Mr Farouk Mandela, a fourth-year student of the Bachelor of Science in Agriculture programme, developed innovative fertilisers that leave no bad smell, using indigenous microorganisms from soil.

"We cook rice or any carbohydrates, roll them in the form of balls, and bury them for one week so that microorganisms are attached to them. We then remove them for multiplication using molasses, which acts as food. After multiplying, we packaged it."

**St Lawrence University: Smart Meter**

Ms Winfred Lunkuse Mirembe innovated a smart electric meter where one doesn't need a token to feed into the meter before electricity can be reloaded.

She explains that the moment someone pays for electricity using mobile money, the power will automatically return without the need for one to necessarily feed in a token number. The innovation aims to save time wasted in recharging one's electric supply.

**Kumi University: Internal Car Wipers**

Mr Aaron Engwau who is a Bachelor of Information Technology student in the faculty of Science and Technology, developed an internal car wiper to save motorists from the task of using cloths to wipe the car screens with a cloth or their palms during a heavy downpour.

"The driver will be able to concentrate on driving to avoid accidents as the internal wiper inside the vehicle will wipe the screen when the foam is too much," he explained.

**Bishop Stuart University, Mbarara**

The students from this University innovated a variety of products, including shoe polish, vaseline, and soap. They also promote growing pasture using cereals such as millet and other leguminous crops.

The leadership of the National Council for Higher Education pledged to support students in developing prototypes into products for commercialisation whenever funds are available.

Bachelor of Science in Computer Science, and Rebeke Mugenyi, a student of Electronics and Communication Engineering, developed a Hexapod rescue box.

This is used for searching and rescuing victims of disasters, including those who are buried by mudslides and landfills.

"It locates human beings buried to allow faster and safer rescue operations. When a disaster strikes, the hexapod is placed at the scene of the disaster," Mugenyi explains.

"The operator sends coordinates of the specific area, and it patrols it automatically."

A human being can also control its movement using a computerised system, and whenever the hexapod detects a human being or any body part like a finger, it will send an alert on the screen of a computer reading... enabling quick rescue."

The innovators say they were inspired by the Kiteezi garbage disaster in August 2024, in which several people were killed when the landfill collapsed.

**Ndejje University: Medicinal products**

Travis Kijongolo, pursuing a diploma in Clinical Medicine, worked with other students and scientists at the university to develop a variety of medicinal products from herbs and medicinal plants. One of these is the moringa powder, which can be mixed with tea or food for a healthy body to boost one's immunity. According to Kijongolo, Moringa contains more Vitamin C than Oranges; more calcium than milk; more potassium than bananas, and more Vitamin A than carrots.

The innovators are taking advantage of herbs available in the country to provide natural medicinal products.

**University of Kisumu: Hydroponics systems, electric and solar power**



## KEY INNOVATIONS

- **Kumi University:** Automated poultry feeder; smart tractor; internal car wipers
- **Kyambogo University:** Electric power bank for motorcycles
- **UCU:** Hexapod rescue robot
- **Ndejje University:** Herbal products (moringa)
- **University of Kisumu:** Hydroponics; solar/electric tukutuku
- **Muni University:** Organic fertilisers
- **St Lawrence University:** Smart electricity meter